

S. G. GOSS.  
 COMBINED PLATE SHAVING, TRIMMING, AND TAIL CUTTING MACHINE.  
 APPLICATION FILED JUNE 14, 1909.

975,521.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 1.

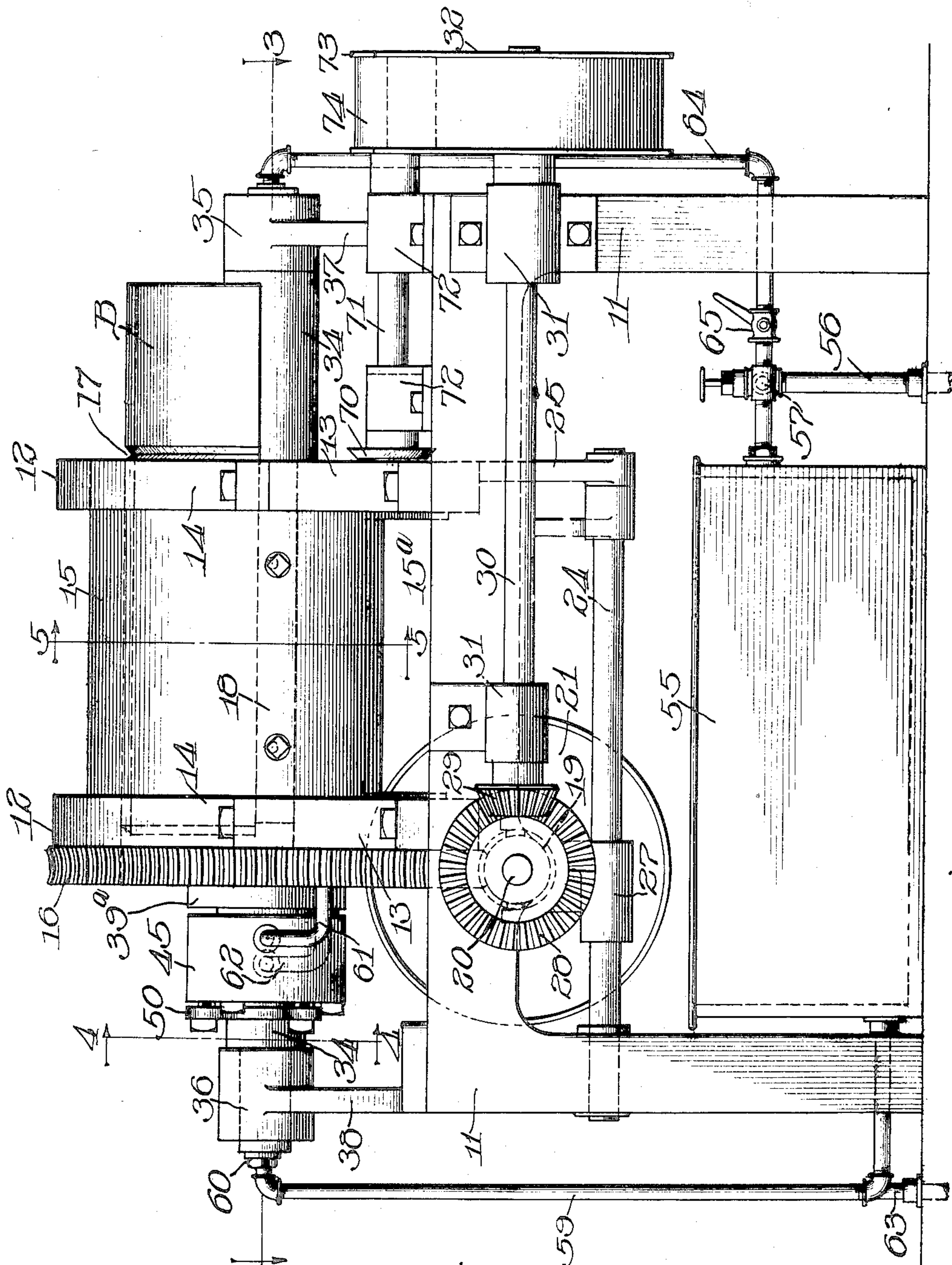


Fig. 1.

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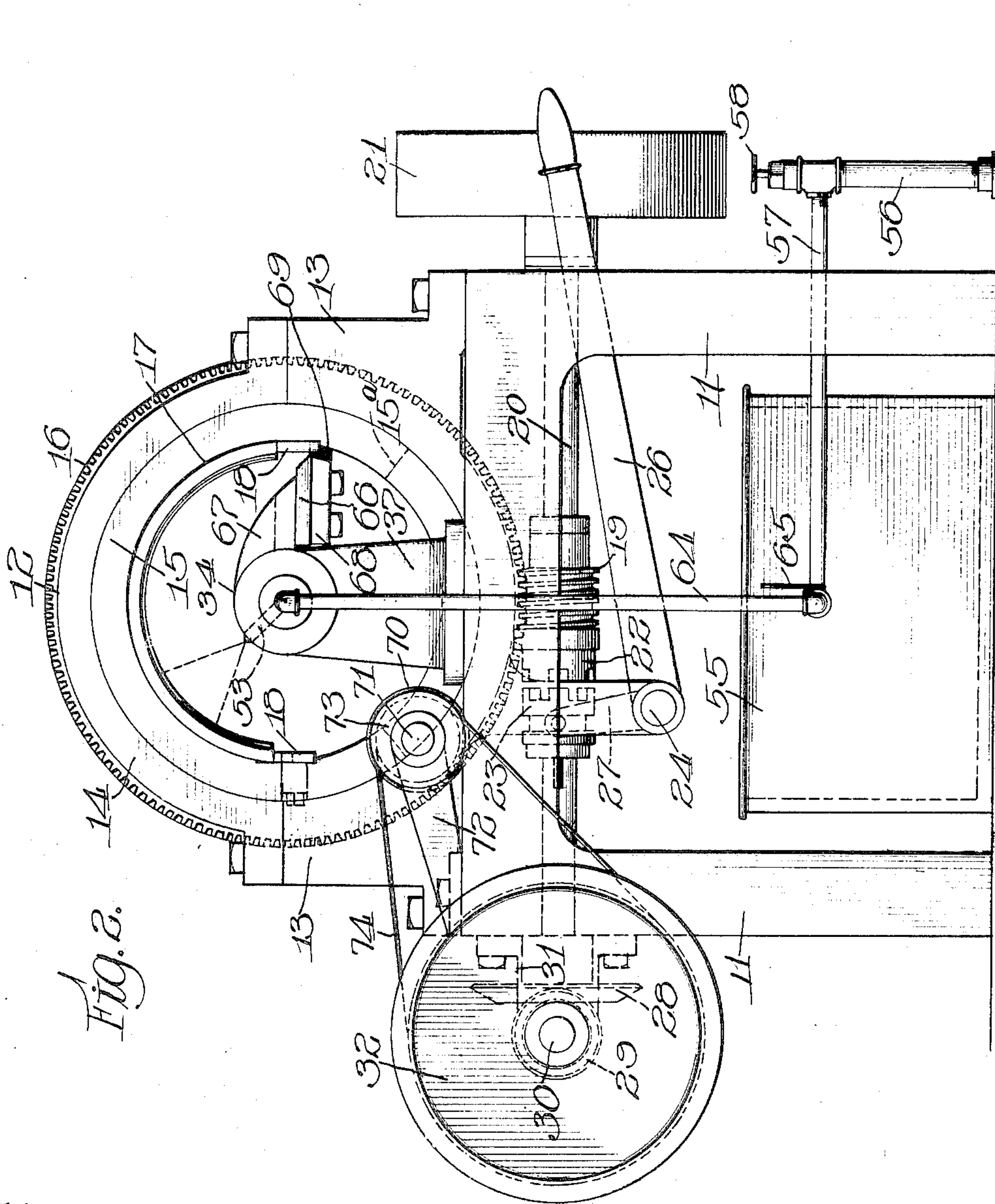
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4 SHEETS—SHEET 2.



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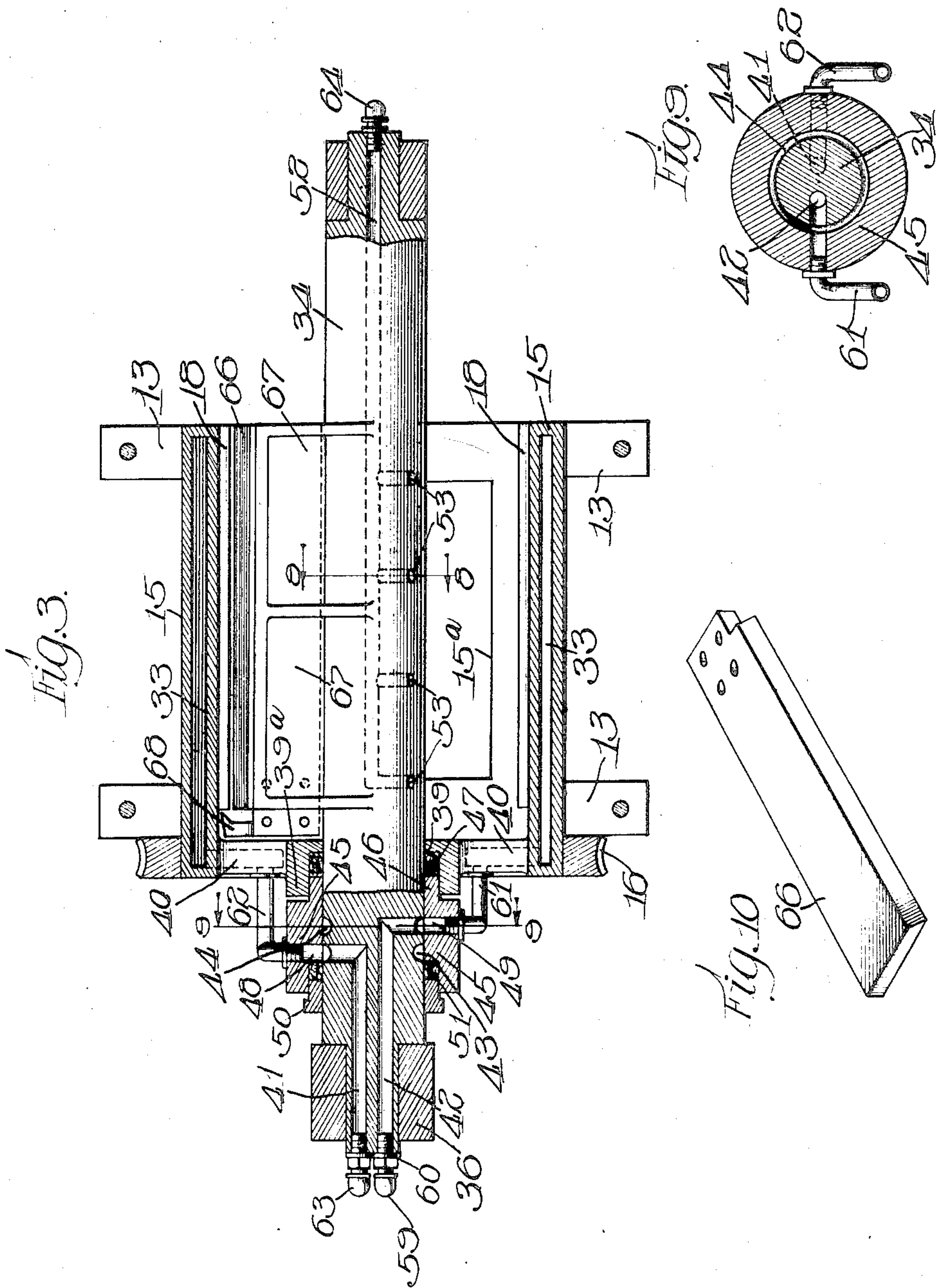
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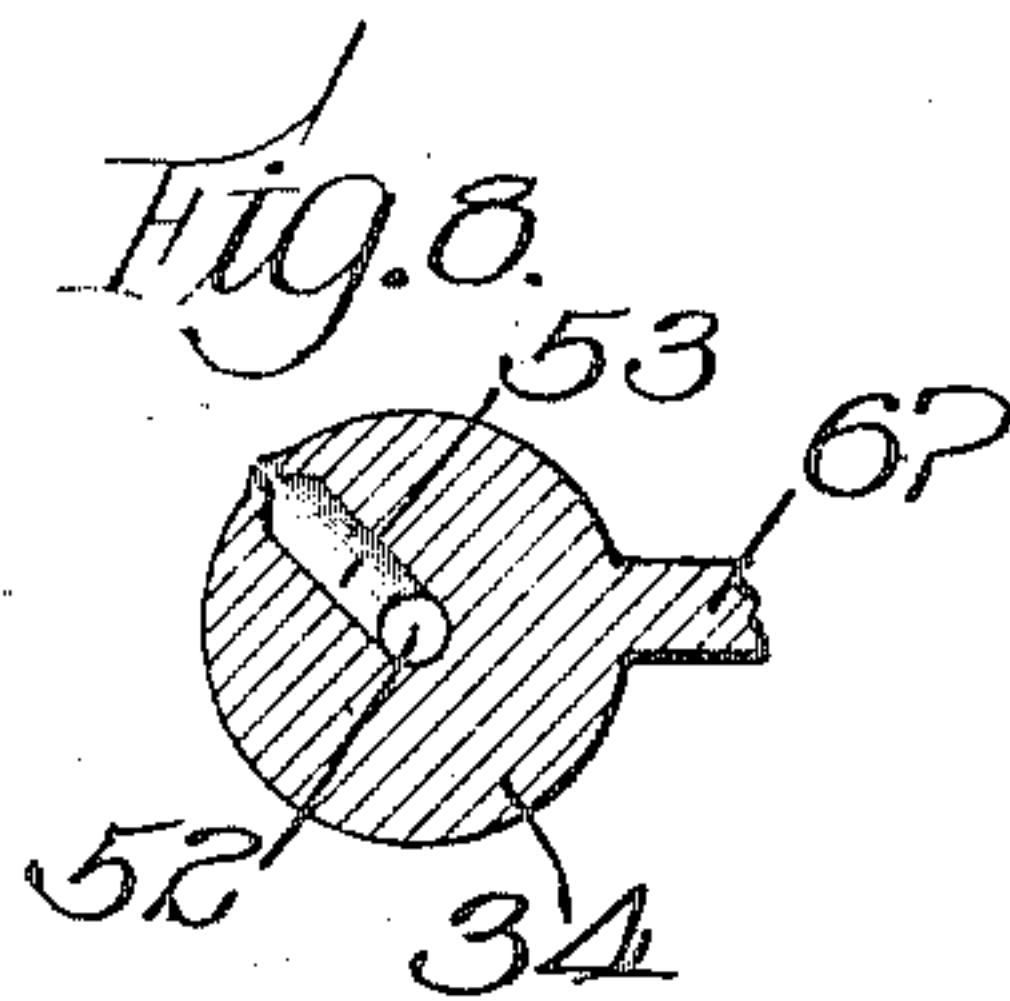
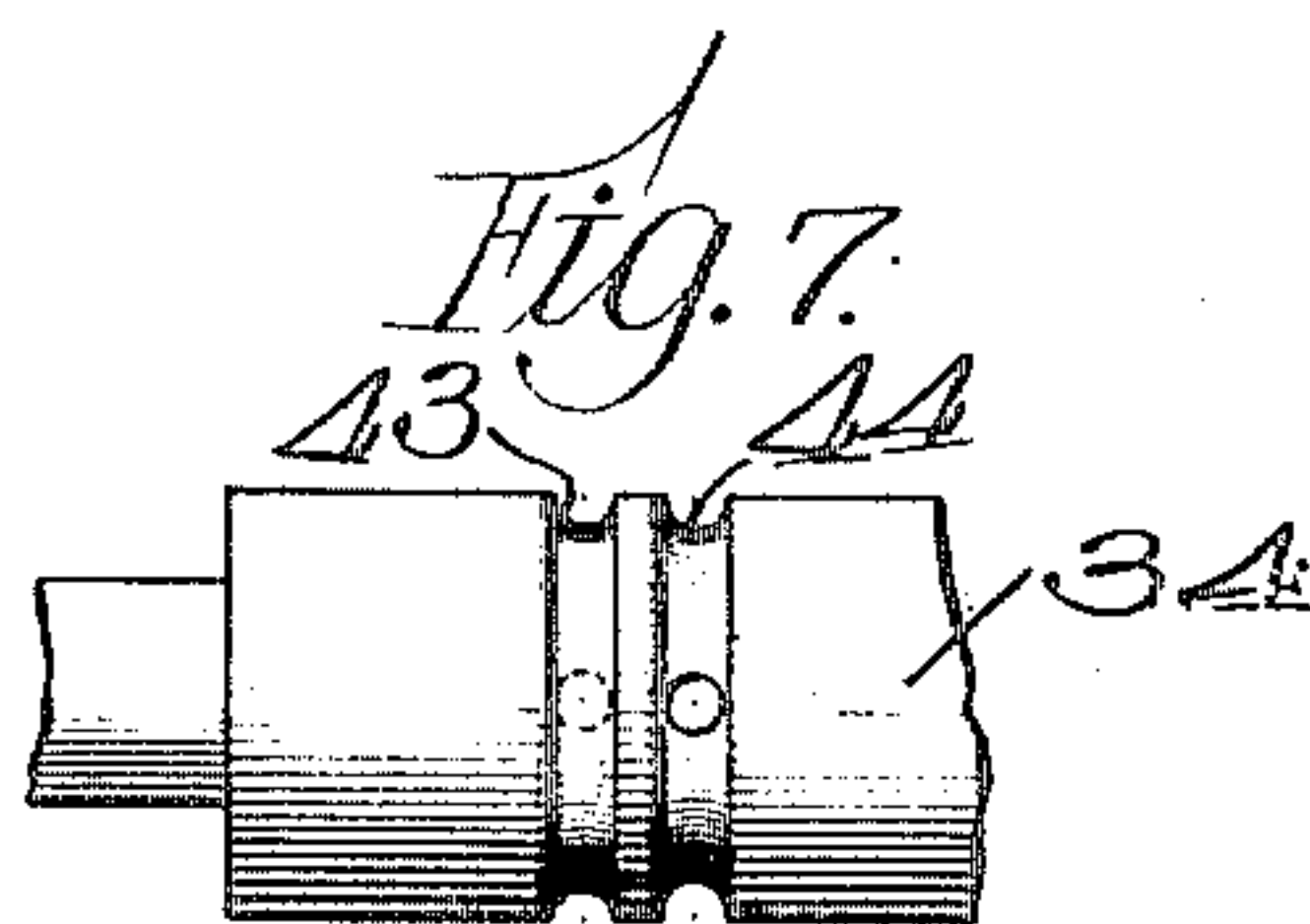
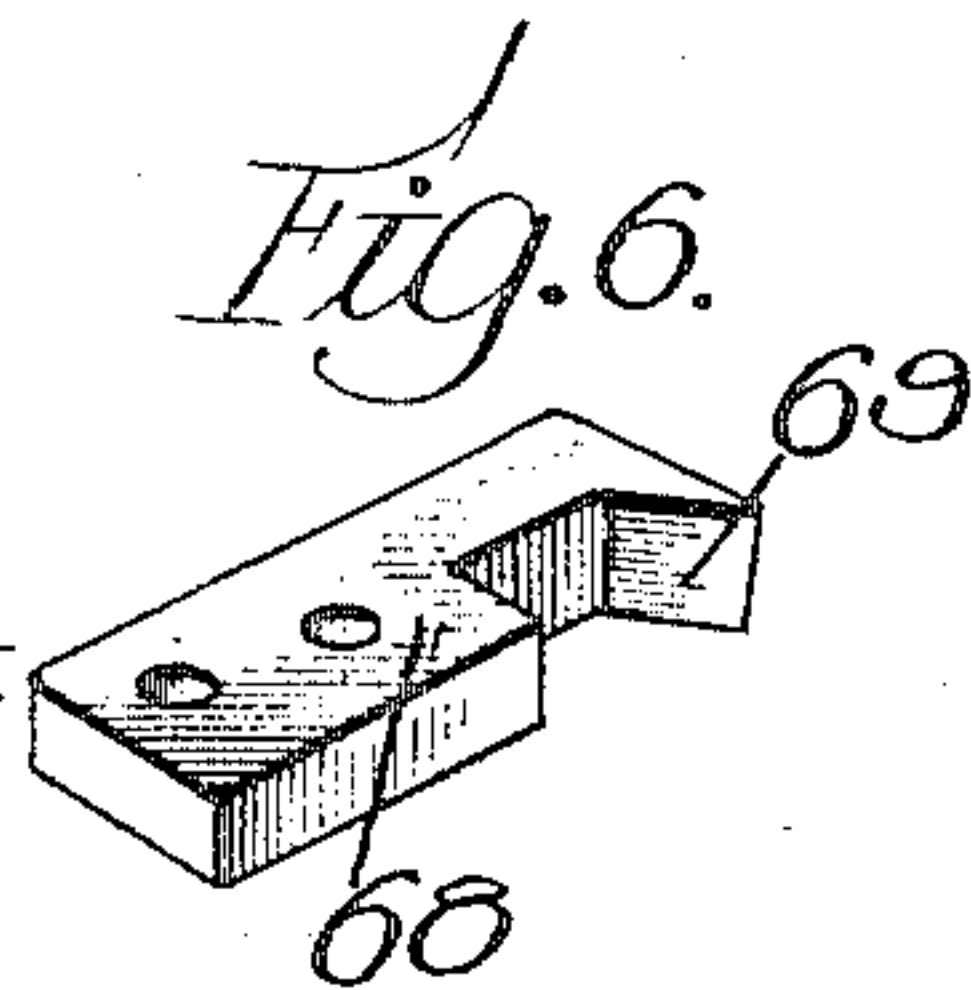
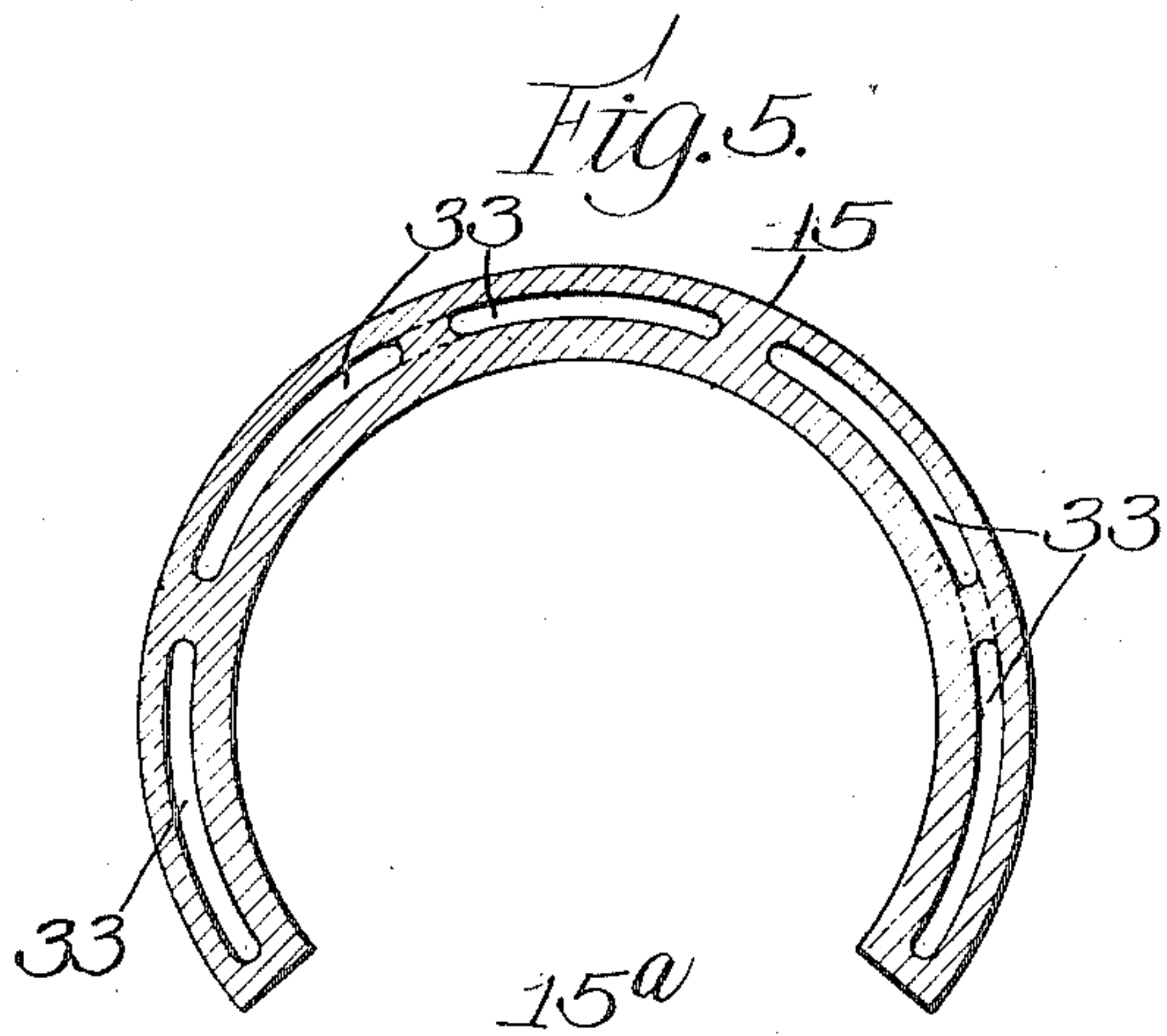
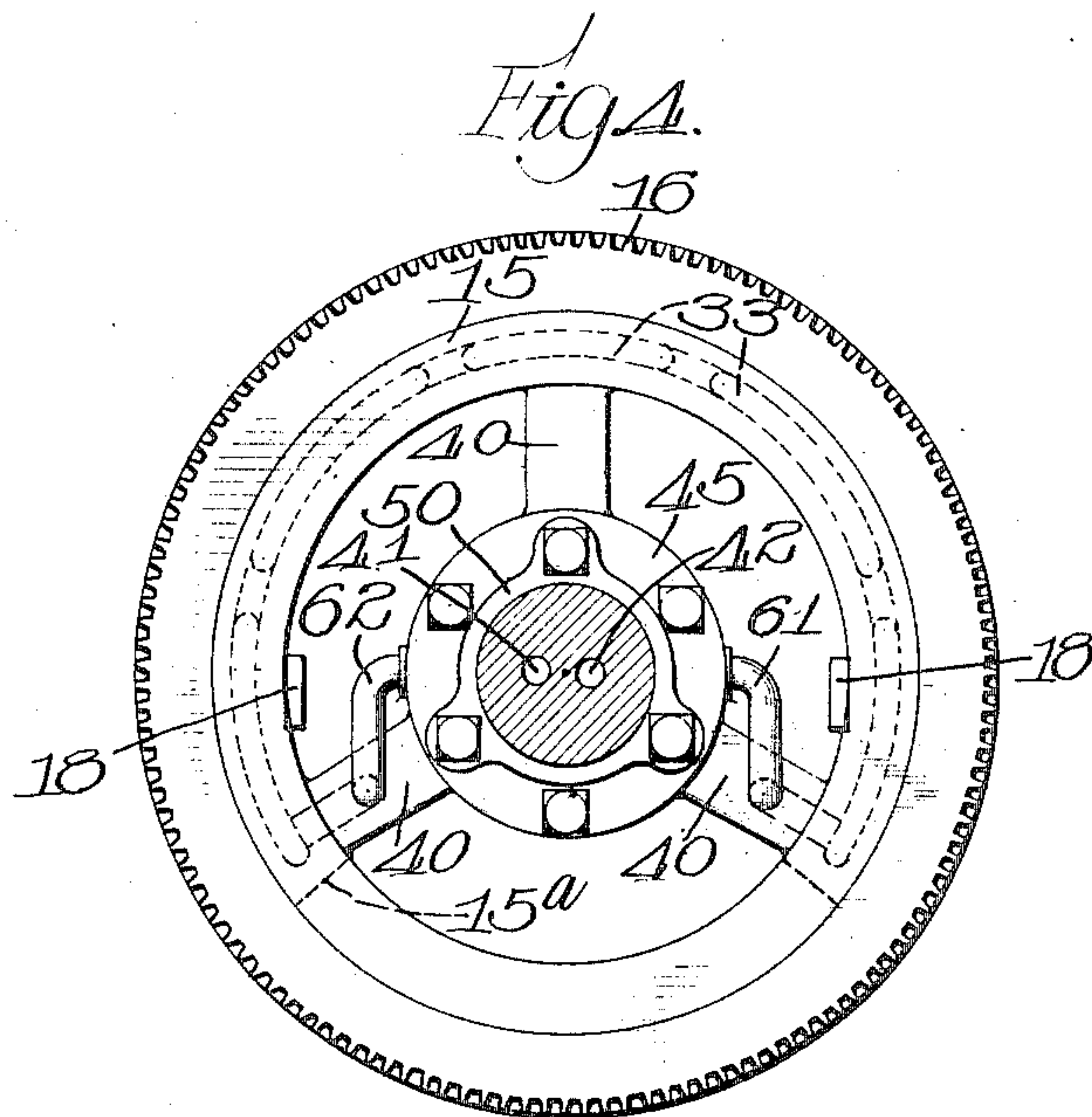
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

SAMUEL G. GOSS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOSS PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

COMBINED PLATE SHAVING, TRIMMING, AND TAIL-CUTTING MACHINE.

975,521.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed June 14, 1909. Serial No. 502,132.

*To all whom it may concern:*

Be it known that I, SAMUEL G. GOSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Combined Plate Shaving, Trimming, and Tail-Cutting Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to combined plate-shaving, trimming and tail-cutting machines for stereotype plates, and its object is to produce a new and improved machine, in which the tails of the stereotype plate may be severed, the edges trimmed and the plate shaved, and at the same time the heated plate cooled in the same machine during the process of shaving, tail-cutting and trimming.

In the drawings,—Figure 1 is a side elevation; Fig. 2 is an end elevation seen from the right in Fig. 1; Fig. 3 is a horizontal section on line 3—3 of Fig. 1; Fig. 4 is a detail, being a vertical section on line 4—4 of Fig. 1; Fig. 5 is a detail, being a vertical section on line 5—5 of Fig. 1; Fig. 6 is an enlarged detail, being a view of the trimming-blade; Fig. 7 is a detail, being a view of a portion of one end of a supporting shaft with the rotatable sleeve removed to show the circumferential grooves for admitting the cooling fluid; Fig. 8 is a detail, being a section on line 8—8 of Fig. 3; Fig. 9 is a detail, being a section on line 9—9 of Fig. 3; and Fig. 10 is a detail, being a view of the shaving-knife.

Referring to the drawings,—11 indicates the frame of the machine.

12 indicates ring-supports, which are mounted upon the frame 11. As is best shown in Fig. 2, these ring-supports are preferably formed of two portions,—base portions 13, which are bolted to the frame, and semi-circular ring portions 14, which are bolted in the base portions 13. These ring-supports rotatably carry a drum 15, which is cylindrical in form, but having a cut-away portion 15<sup>a</sup> intermediate its ends, and is adapted to rotatably fit the ring-supports 12 so as to rotate therein.

Upon one end of the drum 15 is mounted a gear-ring 16. As is best shown in Figs. 2 and 4, the interior surface of the drum is adapted to conform to the exterior surface

of a cast stereotype plate 17, which is adapted to be slid into the open end of the drum from the right in Fig. 1 and is supported therein firmly upon blocks 18 on the interior surface of the drum. The gear-ring 16 meshes with a worm 19 mounted on a shaft 20, which is journaled in the framework 11 of the machine and is driven from any suitable source of power by means of a pulley 21 on one end of the shaft 20. The worm 19 is rotatably carried on the shaft 20 and is provided upon one end with a clutch-member 22. 23 indicates another clutch-member, which is feathered upon the shaft 20 so as to slide longitudinally thereof and rotate therewith and which is adapted to mesh with the clutch-member 22.

24 indicates a rock-shaft, which is journaled at one end in the framework of the machine and at the other end in a suitable bracket, as 25, secured to the frame of the machine. The rock-shaft 24 is operated by a lever 26 secured thereto and is provided with a shifting-arm 27 provided with a forked end of the usual well-known form and description, which engages the clutch-member 23. whereby, when said rock-shaft 24 is rocked in one direction or the other by the lever 26, the clutch-member 23 may move into and out of engagement with the clutch-member 22 on the worm 19 so as to rotate said worm when the clutch-members are in engagement. When the worm is rotated, it will be obvious that the drum 15 will also be rotated by the engagement of the gear-ring 16 with the worm 19.

Upon the end of the shaft 20 opposite the driving pulley 21 is secured a beveled gear 28, which meshes with a beveled gear 29 secured to one end of a counter-shaft 30 journaled in suitable supports, as 31, on the frame of the machine.

32 indicates a pulley, which is secured upon the outer end of the counter-shaft 30.

Referring particularly to Figs. 3, 4 and 5, the drum 15 is cored out with a number of openings 33, which extend longitudinally of the drum and nearly from end to end, as is best shown in Fig. 3. These cored-out openings 33 are alternately connected together by suitable passages at opposite ends of the cylinder, so that any cooling fluid, admitted at the end of the series, will pass from one passage to the other, flowing alternately back and forth longitudinally of the cylinder into



the last passage on the opposite side, as more fully hereinafter described.

34 indicates a shaft, which is supported in suitable collars 35—36, respectively, mounted on standards 37—38 and suitably supported upon the frame of the machine. The shaft 34 is located centrally of the drum 15 and projects beyond it at each end, as is best shown in Figs. 1 and 3. At one end the drum 15 is provided with a bearing 39, which is supported centrally of the drum by means of arms 40. The bearing 39 and arms 40 are preferably formed integral with the drum. The bearing 39 is provided with a peripheral flange 39<sup>a</sup> and is centrally bored to receive the shaft 34, which is cylindrical in section to permit the revolution of the drum thereon. At one end—the left-hand end in Figs. 1 and 3—the shaft 34 is provided with two passages 41—42 extending inward from the end of the shaft 34 toward the adjacent end of the drum. At the inner ends the passages 41 and 42 turn and open upon the exterior periphery of the shaft 34, respectively, into the peripheral grooves 43 and 44 on the shaft 34.

45 indicates a collar, which is journaled on the shaft 34 and is provided at its inner end with a rabbeted portion 46, which is adapted to fit under the peripheral flange 39<sup>a</sup> of the bearing head 39.

47 indicates packing between the flanges 39<sup>a</sup> and the shaft 34 and the rabbeted portion of the collar 45. The collar 45 is provided upon opposite sides with openings 48 and 49, which register, respectively, with the peripheral grooves 43 and 44 on the shaft 34. The outer end of the collar 45 is rabbeted out on its interior peripherally so as to form an opening into which fits a collar 50 with a packing 51 interposed. The other end of the shaft 34 is provided with a longitudinal passage 52 extending inward from the right-hand end of the shaft 34 into the interior of the drum 15. At that part of the passage 52 which lies within the drum 15 it is provided with a plurality of openings 53, which, as is best shown in Fig. 8, are narrowed at their outer ends and open upon the periphery of the shaft 34 so as to permit the passage of the cooling fluid passed into the passage 52, as above described, upon the inner periphery of the plate when in position in the cylinder, as is best shown in Figs. 2 and 8.

55 indicates a tank adapted to contain a supply of the cooling fluid, preferably under compression, and led into the tank from any suitable source through supply pipes 56—57 controlled by a valve 58. The cooling fluid may be cold air under compression or cold water forced into the tank or the apparatus above described, or any other suitable fluid adapted for cooling the apparatus.

59 indicates a pipe, which opens into the

tank 55 at one end, and at the other end is connected by a suitable screw-threaded connection, as 60, with the passage 42 and serves as an inlet passage for the fluid from the tank into the drum.

61 indicates a pipe, which is screw-threaded into the opening 49 at one end, and at the other end opens by any suitable connection into the first of the series of passages 33 upon the right-hand side of Fig. 5.

62 indicates a pipe, which, by any suitable connection, is connected at one end with the last of the passages 33, and at its other end by any suitable connection opens into the passage 48 in the collar 45.

63 indicates a discharge pipe, which is screw-threaded by any suitable connections into the outer end of the opening 41 and serves to discharge the fluid after passing through the drum.

64 indicates a pipe leading from the tank 55 to the outer end of the passage 52, with which it is connected in any suitable manner. The pipe 64 is controlled by a suitable valve 65, by means of which a cooling fluid may be admitted from the tank 55 through the pipe 64 into the opening 52 and thence sprayed, as indicated in Fig. 2, upon the inner surface of the plate.

66 indicates a shaving-knife, which is secured to suitable brackets 67 projecting from and preferably formed integral with the shaft 34. The shaving-knife 66 is mounted on the brackets 67 so that its cutting edge may bear upon the usual ribs on the interior surface of the plate when the drum is rotated and shave them so that the plate may be of the proper thickness.

68 indicates a trimming-knife, which is mounted upon one of the brackets 67 and secured thereto and is provided with a beveled cutting edge 69 conforming to the bevel of the edge of the plate. The cutting edge is located so as to bear upon the inner edge of the plate, when the drum is rotated, to trim it to a suitable bevel.

70 indicates a rotary cutter having a beveled cutting periphery corresponding to the desired bevel upon the plate and secured to a counter-shaft 71 which is journaled in suitable bearings, as 72, on the frame of the machine. The outer end of the counter-shaft 71 is provided with a pulley 73, which, by means of a belt 74, is driven from the pulley 32 on the counter-shaft 30.

17 indicates the stereotype plate, and B the tail-piece of said plate usually left after the casting of the plate in the ordinary manner.

The operation of the devices is as follows: The plate being pushed into the drum from its open end, its edges resting on the bearings 18, is held thereby closely to the interior surface of the drum. The valves being opened, the cooling fluid, which may, as has



been said, be either cold air, cold water, or any other suitable cooling fluid, flows through pipe 59, cored-out openings 33 into the drum 15, out through pipe 62 and pipe 5 63, keeping the surface of the drum constantly cold and chilling the plate. At the same time the cooling fluid—the valve 65 being open—passes through the pipe 64 into the other end of the shaft 34 and through 10 passages 53 and is sprayed upon the under surface of the plate. The clutch-members 22—23 being thrown into engagement by the lever 26, the drum is caused to slowly rotate, bring the plate by its rotation into 15 engagement with the cutting edge of the shaving-knife 66, shaving the interior of the plate, as it rotates, to a proper thickness. The trimming-knife 68 also operates to trim the inner beveled edge of the plate, and the 20 rotary cutter 70, driven as above described, severs the tail-piece from the plate as the rotation of the drum brings the plate into operative relation with the rotating cutter,—the rotating cutter at the same time 25 trimming the edge of the plate. As the drum reaches its original position, its rotation is stopped by throwing the clutch-members out of engagement, and the plate, cooled during the trimming, shaving and 30 tail-cutting operation, is ready for removal and in shape to be immediately transferred to the operating press.

What I claim as my invention and desire to secure by Letters Patent is,—

35 1. In combination, a supporting frame, a shell mounted thereon, plate finishing mechanism, means for operatively moving said shell and said plate finishing means relatively to each other, and means for supply- 40 ing cooling fluid to said shell.

2. In combination, a supporting frame, a shell mounted thereon, plate finishing mechanism, means for operatively moving said shell and said plate finishing means rela- 45 tively to each other, means for supplying cooling fluid to said shell, and a spraying device adapted to spray the plate during the finishing operation.

3. The combination with a support for a 50 stereotype plate, a tail-cutting knife, and means for operatively moving said support and said tail-cutting knife relatively to each other, of means for forcing a cooling fluid through said plate support during the tail- 55 cutting operation.

4. The combination with a support adapted to hold a stereotype plate, a tail-cutting knife, shaving and trimming knives, and mechanism for operatively moving said support and said tail-cutting shaving and trim- 60 ming knives relatively to each other, of means for forcing a cooling fluid through said plate support during the tail-cutting trimming and shaving operation.

65 5. The combination with a support

adapted to hold a stereotype plate, plate-finishing mechanism, and mechanism for moving said support and said plate-finishing mechanism relative to each other, of means for forcing a cooling fluid through 70 said plate support, and means for spraying a cooling fluid upon the exposed side of said plate, during said plate-finishing operation.

6. The combination with a rotatable 75 drum having fluid passages and adapted to support a stereotype plate, means for rotating said drum, and a tail-cutting knife adapted to be brought into operative relation with said plate by the rotation of said 80 drum, of means for forcing a cooling fluid through said fluid passages during said tail-cutting operation.

7. The combination with a rotatable 85 drum having fluid passages and adapted to support a stereotype plate, means for rotating said drum, and a tail-cutting knife adapted to be brought into operative relation with said plate by the rotation of said 90 drum, of means for forcing a cooling fluid through said fluid passages during said tail-cutting operation, and means for spraying a cooling fluid upon the exposed side of said plate during said tail-cutting operation. 95

8. The combination with a rotatable drum having fluid passages and adapted to support a stereotype plate, means for rotating said drum, and plate-finishing mechanism adapted to be brought into operative 100 relation with said plate by the rotation of said drum, of means for forcing a cooling fluid through said fluid passages during said plate-finishing operation.

9. The combination with a rotatable 105 drum having fluid passages and adapted to support a stereotype plate, means for rotating said drum, and plate-finishing mechanism adapted to be brought into operative relation with said plate by the rotation of 110 said drum, of means for spraying a cooling fluid upon the exposed surface of said plate during said plate-finishing operation.

10. The combination with a rotatable 115 drum having fluid passages and adapted to support a stereotype plate, means for rotating said drum, and plate-finishing mechanism adapted to be brought into operative relation with said plate by the rotation of 120 said drum, of means for forcing a cooling fluid through said cooling passages, and means for spraying a cooling fluid upon the exposed surface of the plate during said plate-finishing operation.

11. The combination with a rotatable 125 drum having intercommunicating fluid passages and adapted to hold a stereotype plate, means for rotating said drum, and plate-finishing mechanism adapted to be brought into operative relation with said 130



plate by the rotation of said drum, of means for forcing a cooling fluid through said intercommunicating passages during said plate-finishing operation, and means for  
5 spraying a cooling fluid upon the exposed side of said plate during said plate-finishing operation.

12. The combination with a rotatable drum having intercommunicating fluid pas-  
10 sages and adapted to hold a stereotype plate, means for rotating said drum, and plate-finishing mechanism adapted to be brought into operative relation with said  
15 shaft concentric with said drum, a source

of cooling fluid supply, passages in said shaft connected to said cooling fluid supply and connected with said intercommunicating passages in said drum, a second fluid pas-  
20 sage in said shaft, openings from said fluid passage to the exterior of said shaft and facing toward the exposed surface of said plate, and connections between said source of cooling fluid supply and said second opening in said shaft.

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